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1409 EMIL STREET, P. O. BOX 9538, MADISON, WIS. 53715 • TEL (608) 267-4848

April 28, 1980  
C 9078

Mr. Chuck Howard  
c/o Rockford Blacktop Construction Company  
600 Boylston Street  
Loves Park, IL 61111

Re: Hydrogeologic Investigation  
Pagel Pit Landfill

Dear Mr. Howard:

This letter and the accompanying drawings present the results of the hydrogeologic investigation in the vicinity of Pagel Pit Landfill. Recently, two private wells (Lyford and Baxter) located along Lindenwood Road have been shown to be contaminated. The purpose of this investigation was to determine whether the Pagel Pit Landfill is contributing to the degradation of water quality at these wells. The investigation included the collection and analytical analysis of water quality samples, a review of the historical water quality records of wells in the vicinity of the landfill, and the analysis of recently measured water levels.

The direction of groundwater movement beneath a source of contamination dictates the potential migration direction of the contaminant within a groundwater flow system. As the accompanying water table map (Drawing C 9078-A1) indicates, groundwater flow in the vicinity of the landfill is from east to west, with shallow groundwater probably discharging into Killbuck Creek. The Lyford and Baxter wells are upgradient, or upstream, from the landfill with Monitoring Wells PP4 and PP6 being alongside, or marginally downgradient from the landfill.

The results of the water quality analyses of samples obtained on March 7, 1980 are attached. The data indicates that the source of contamination is probably to the east of the Lyford and Baxter residences. The two on-site monitoring wells, PP4 and PP6, displayed the lowest concentrations of parameters analyzed for, whereas the Lyford and Baxter wells displayed the highest concentrations of these parameters. The

Blacktop House and Scale-House wells were between these two extremes. The attached isoconcentration map of conductivity measurements illustrates the trend of decreasing concentrations to the west. Total alkalinity, total hardness, and nitrate concentrations at the Lyford and Baxter homes are generally two times higher than at PP4 and PP6 and display the same areal trends as conductivity. Nitrate concentrations at the Blacktop House, Lyford house, and Baxter house wells exceed the Interim Drinking Water Standard of 10 mg/l established by the United States Environmental Protection Agency. A comparison of the historical water quality data for PP4 and PP6 (starting on 1972) and the recent data shows no significant change in water quality at those two wells since 1972.


An abandoned solvent storage site, located approximately 2000 feet east of Lindenwood Road, appears to be the likely source of contamination at the Lyford and Baxter wells. Based on a visual inspection of the site area and reports by landfill personnel, various waste materials including many buried barrels, were dumped in an abandoned limestone quarry. The potential for leachings from the waste to migrate down to the water table and contaminate groundwater in a downgradient direction is high in what is presumed to be a fractured limestone environment.

In summary, the water level and water quality data indicate the Pagel Pit Landfill is not the source of contamination at the Lyford and Baxter wells. It cannot be shown that no groundwater impact has occurred at the landfill since no directly downgradient wells exist. Currently available information indicates the source of contamination of the wells in question may be the abandoned solvent storage site. Additional documentation would be necessary to conclusively show the abandoned solvent storage site is the source of this contamination or to document an alternate source. Due to the unknown nature of waste material disposed of at the suspect site, we urge caution in using the affected water supplies and recommend the homeowners be so notified.

If you have any questions or comments regarding the above information, please do not hesitate to contact us.

Respectfully submitted,

WARZYN ENGINEERING INC.

  
Steven G. Willmann  
Project Manager

  
Daniel R. Viste  
Chief Hydrogeological Section

SGW/DRV/dmf

Encl: Water Table Map, C 9078-A1

Isoconcentration Map-Conductivity, C 9078-A2

Analytical Laboratory Results, March 7, 1980



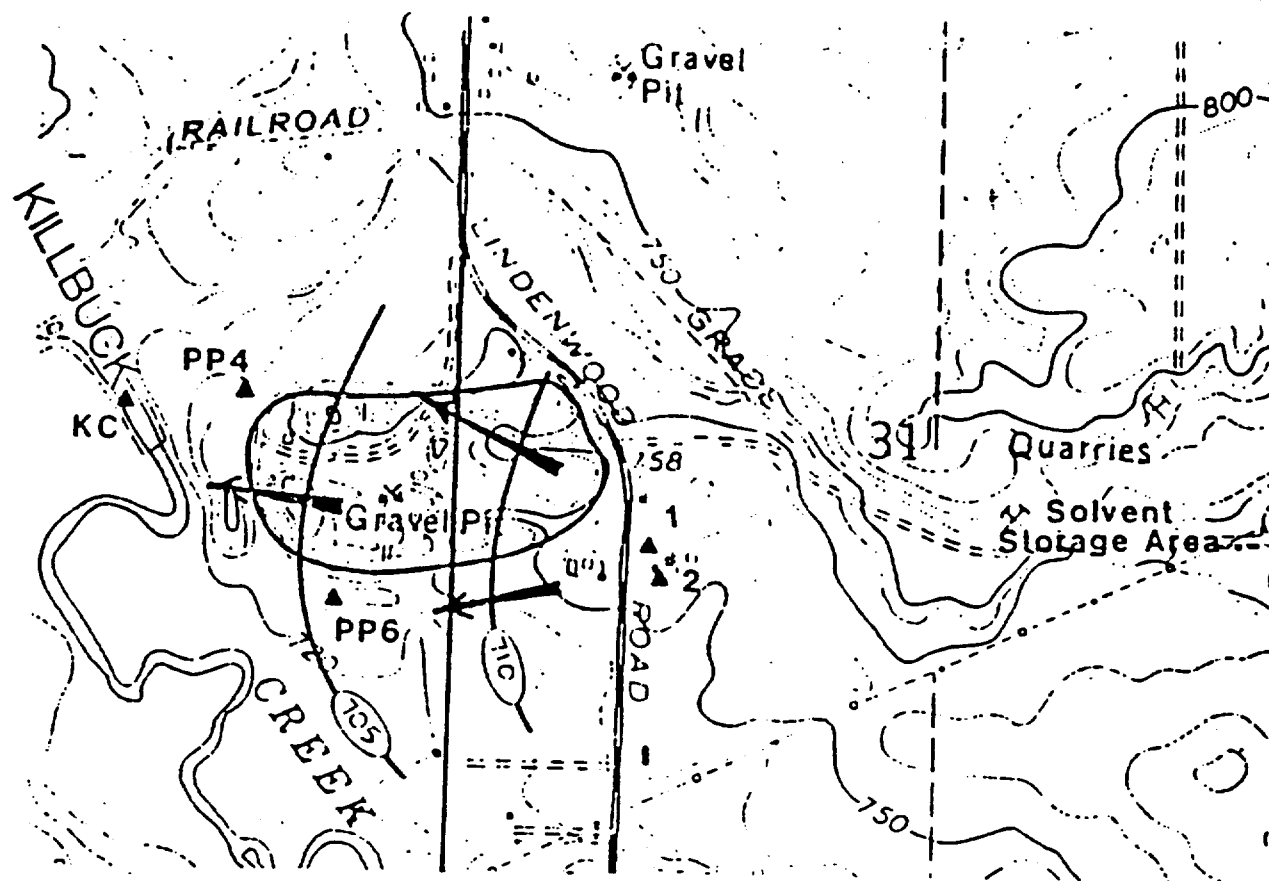
**WARZYN****ENGINEERING INC****ANALYTICAL LABORATORY RESULTS**Project Rockford BlacktopLocation Rockford, IllinoisDate Received: 3/7/80Project No: C 9078Sheet 1 of 1Ckd PC App'd SLDate Issued: 3/13/80

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<u>Sample No.</u>	<u>pH</u> <u>Units</u>	<u>Conductivity</u> <u>umhos/cm</u>	<u>* Total</u> <u>Alkalinity</u>	<u>Chemical Oxygen</u> <u>Demand</u>	<u>Chloride</u>	<u>Total</u> <u>Hardness</u>	<u>Nitrate</u> <u>Nitrogen</u>	<u>Sulfate</u>
Daxter Well	6.55	1490	708	12	26	900	13	72
Blacktop House	6.80	990	426	<10	25	540	11	47
Lyford Well	6.75	1310	464	21	50	670	28	65
Scale House & HP1	7.10	745	348	<10	12	420	4	32
Page1 Pit #PP4	7.30	655	280	12	21	330	4	18
Page1 Pit #PP5	7.40	640	252	<10	12	350	7	33

\* Test run 3 days after sample collection

All parameters are mg/l unless otherwise stated.



WATER LEVEL	WELL
703.61'	PP4
705.64'	PP6
714.49'	#1 EASTER
716.83'	#2 LYFORD
702.20'	KC - KILLBUCK CREEK

#### LEGEND

- LANDFILL AREA
- WATER TABLE CONTOUR
- GROUNDWATER FLOW DIRECTION
- WELL LOCATION



SCALE: 1" = 1000'

DATE: 3/1/80

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**WATER TABLE MAP 3-20-80**

Pagel Pit Landfill

Rockford Blacktop Construction Company  
Winnebago County, Illinois

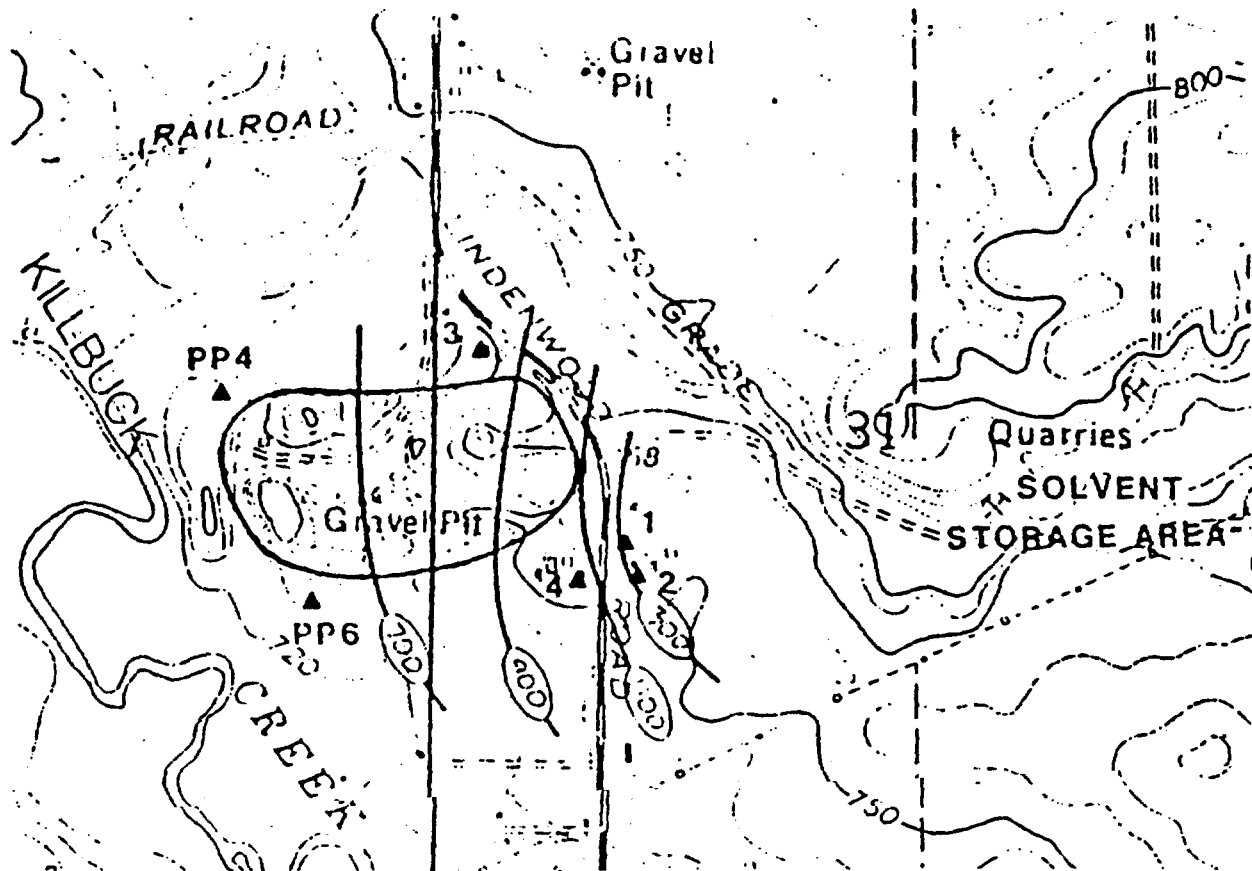
OWN: PCH

CHK'D BY: M

APP'D: David L. Nick

DATE: 4-28-80

CONTR: A1



CONDUCTIVITY	WELL
655	PP4
640	PP6
1490	#1 PAXTER
1310	#2 LIPED
745	#3 GARDENHOUSE
980	#4 PAXTER

#### LEGEND

- LANDFILL AREA
- WELL LOCATION
- LINE OF EQUAL CONDUCTIVITY CONCENTRATION



SCALE: 1"=1000'

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#### ISOCONCENTRATION MAP-CONDUCTIVITY

Pagel Pit Landfill

Rockford Blacktop Construction Company

Winnebago County, Illinois

OWN: EPH

CONDUCTIVITY

APPRO: DANIEL R. V. 11/11

DATE: 4-28-80

CHG: TB-AZ